

cardiola," "Paleaster," "Brodei," "Cronchii," "erenistra." We imagine that "Heterostracon" and "Osteostracon Cephaspidæ" (p. 219) should be either English, Heterostracous and Osteostracous Cephalaspids, or properly converted into the Latin form.

The guidance of the Author, of Mr. Jones, gardener at Builth, and other good people, is recommended *passim* to the reader; and papers in the 'Geological Magazine' and other useful periodicals are cited for information old and new: but why the only perfect geological work on North Wales (Geol. Surv. Mem. vol. iii.), the real basis of Mr. Symonds's country, should not have been kept well before the reader, and why the guidance of the Geological Surveyors should have been so little thought of, it is difficult to conjecture.

We have thus pointed out several matters for improvement in this well-intentioned book, which we hope will be required in a new edition. Written by one who has known his country-side, with cultivated intelligence and an eye for nature, for many years, and who has long enjoyed the companionship of good observers, thinkers, and writers, the Rev. Mr. Symonds's 'Records of the Rocks,' like his other writings, is directed, with a good and useful aim, to the advance of knowledge among the so-called "educated," but frequently little-informed, class of society. It is a learned and comprehensive guide-book, thoroughly imbued with a love of nature in her many aspects, and with a desire that all should benefit by an intelligent recognition of the natural sciences and by scientific pursuits.

A Manual of Palæontology for the Use of Students, with a General Introduction on the Principles of Palæontology. By H. A. NICHOLSON, M.D., D.Sc., &c. Svo. Edinburgh, 1872.

SCHOOLS and colleges now find themselves better provided with zoological and palæontological text-books than heretofore. Dr. Nicholson's 'Manual of Palæontology' has several good points. Though very comprehensive it is not too diffuse (only to Graptolites, a favourite subject, are a few extra pages given); it keeps the conditions of fossilization and geological succession well before the reader (especially in Parts I. and IV.)—and treats the Vertebrate remains less in detail than the Invertebrate, in accordance with the larger acquaintance the student has usually to make with the latter than with the former.

Part III., on fossil Plants, treated of as the successive floras of geological periods, is a useful addition to the palæozoology, and is carefully worked as far as it goes; but unaccountably it makes no mention of the Diatomaceæ and the Calciferous Algæ (*Lithothamnium* &c.), which, like *Chara*, play such an important part in the constitution of many strata.

The author judiciously handles fossils of obscure affinities, such as *Stromatopora*, *Receptaculites*, *Crossopodia*, &c. But a study of Mr. Albany Hancock's memoir "on Vermiform Fossils," in the 'Annals of Natural History' for 1858, would have enlightened him on the nature of the last-mentioned fossil and its innumerable allies, in-

cluding even some of the *Oldhamiæ*, Eophyton, and Fucoids. Nor does he seem to be aware that two head-portions of *Palæopyge* (p. 167) have been found and published, thus removing it from the category of the doubtfuls.

Dr. Nicholson's illustrations are numerous and apt. They have been selected for the most part from such as the Geological Survey of Canada, Principal Dawson (author of 'Acadian Geology'), the publishers of D'Orbigny's 'Cours élémentaire,' and, he might have added, Page's 'Text-book' and his own 'Text-book of Zoology' have supplied him with. Why the wretched Ventriculite at p. 70 should claim its paternity so boastfully from "Lyell" is not clear. That the authorship of some only, and not of all the cuts (often as they may have been used before), should have been acknowledged is to be regretted; for if the real origin of all the figures were carefully indicated, the student might have the opportunity of learning something more of the history of genera and species by referring to the original observers. Not but that many authors are mentioned in the text: by following, however, a good example in this matter, such as Dana's excellent 'Manual of Geology,' Dr. Nicholson would have improved his well-designed book; and he would probably have been reminded that the Russian Mammoth skeleton (p. 445) is always a puzzle to tyros on account of its unexplained head-skin and shapeless hoofs, that the Ichthyosaur at p. 369, with outlined body, ought to have a fluked tail in the figure as well as in the text, and that Mr. S. V. Wood's fine Alligator-relic, at p. 367, is an *upper* and not a *lower* jaw.

MISCELLANEOUS.

Anatomical Investigations on the Limuli. By A. MILNE-EDWARDS.

ON June 26, 1869, I communicated to the Philomathic Society the first part of an investigation which I had just made upon the anatomy of the *Limuli*; and a short abstract of this communication was inserted in the 'Bulletin' of that learned Society and in the 'Journal de l'Institut.' This memoir, accompanied by numerous figures, ought to have been printed soon afterwards; but the unhappy circumstances under which France laboured in 1870 and 1871 prevented its publication, and it is only now that I am able to bring it out in its entirety.

The first notions that we possess as to the internal organization of the *Limuli* date from 1828, and are due to Strauss-Dürckheim. Ten years afterwards Van der Hoeven published on the whole group a very carefully executed monograph; but all the anatomical part of his work, which was studied by means of individuals preserved in spirit, leaves much to be desired, and we observe in it serious errors, which, however, it was almost impossible to avoid under the circumstances in which this author found himself.

About the same time Duvernoy added some details to what was previously known as to the respiratory apparatus of the *Limuli*. In